BONNEVILLE POWER ADMINISTRATION

Fall Chinook Acclimation Project

Pittsburg Landing, Captain John Rapids, and Big Canyon

Annual Report 2001 January 2004 DOE/BP-00004235-3

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Fall Chinook Acclimation Project

Annual Report 2001

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The Fall Chinook Acclimation Program owes a special thanks to the U.S. Forest Service and the U.S. Army Corps of Engineers. The U.S. Forest Service agreed, in 1998, to allow the Nez Perce Tribe to leave assembled fish rearing tanks and related equipment at a storage area near the fish acclimation site at Pittsburg Landing. This agreement has resulted in considerable dollar savings, greatly reduced equipment fatigue and reduced assembly and disassembly time by half. The U. S. Army Corps of Engineers continues to address modifications needed to correct operational deficiencies at the Capt. John Rapids and Big Canyon facilities.

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The Fall Chinook Acclimation Project staff members who were responsible for the daily operation of the facilities included Raphael Johnnie, Arnold Henry, Lou Ann Lasswell, Brent Broncheau, Brett Bisbee, Austin Samuels, Robert Samuels, Steve Coomer, Mike Bisbee, Charles Axtell, and Mark Wilson. Chuck Jackson assisted with fish transport and equipment maintenance. Mike Key, Assistant Project Leader, directed the assembly and disassembly of the facilities, provided technical assistance for the fish acclimation program and was responsible for staff supervision. Letitia Whitman collected information and prepared this report for publication.

Bonneville Power Administration and Northwest Power Planning Council provide project reviews and budget recommendations for the Fall Chinook Acclimation Program. Ken Kirkman, Bonneville Power Administration Contracting Officers Technical Representative, facilitated programmatic and budget issues, Patricia O'Donnell, BPA Contract Specialist, was responsible for contract preparation and review and Arleen Henry, NPT Grants and Contracts Accountant, provided monitoring and evaluation of the project contracts

ABSTRACT

Fisheries co-managers of *U.S. v Oregon* supported and directed the construction and operation of acclimation and release facilities for Snake River fall Chinook from Lyons Ferry Hatchery at three sites above Lower Granite Dam. In 1996, Congress instructed the U.S. Army Corps of Engineers (USCOE) to construct, under the Lower Snake River Compensation Plan (LSRCP), final rearing and acclimation facilities for fall Chinook in the Snake River basin to complement their activities and efforts in compensating for fish lost due to construction of the lower Snake River dams. The Nez Perce Tribe (NPT) played a key role in securing funding and selecting acclimation sites, then assumed responsibility for operation and maintenance of the facilities. In 1997, Bonneville Power Administrative (BPA) was directed to fund operations and maintenance (O&M) for the facilities. Two acclimation facilities, Captain John Rapids and Pittsburg Landing, are located on the Snake River between Asotin, WA and Hells Canyon Dam and one facility, Big Canyon, is located on the Clearwater River at Peck. The Capt. John Rapids facility is a single pond while the Pittsburg Landing and Big Canyon sites consist of portable fish rearing tanks assembled and disassembled each year. Acclimation of 450,000 yearling smolts (150,000 each facility) begins in March and ends 6 weeks later. When available, an additional 2,400,000 fall Chinook sub-yearlings may be acclimated for 6 weeks, following the smolt release.

The project goal is to increase the naturally spawning population of Snake River fall Chinook salmon upstream of Lower Granite Dam. This is a supplementation project; in that hatchery produced fish are acclimated and released into the natural spawning habitat for the purpose of returning a greater number of spawners to increase natural production. Only Snake River stock is used and production of juveniles occurs at Lyons Ferry Hatchery. This is a long-term project, and will ultimately work towards achieving delisting goals established by National Marine Fisheries Service (NMFS). Complete returns for all three acclimation facilities will not occur until the year 2002. Progeny (which would then be natural origin fish protected under the Endangered Species Act) from those returns will be returning for the next five years.

In 2001, a total of 2,051,099 fish weighing 59,647 pounds were released from the three acclimation facilities. The total includes 318,932 yearling fish weighing 31,128 pounds and 1,732,167 sub-yearling fish weighing 28,519 pounds. Yearling fish numbers were reduced by Bacterial Kidney Disease (BKD) and sub-yearling acclimation time was limited by record low river water flows.

1.0 INTRODUCTION

1.1 Project Background

Fall Chinook were once widely distributed in the Snake River from the confluence with the Columbia River upstream to Shoshone Falls, 615 river miles. Construction of the Hells Canyon Dam Complex and the Lower Snake River dams eliminated or severely degraded 530 miles of spawning habitat. The loss of spawning and rearing areas and the degradation of migration habitat are the primary reasons that Snake River fall Chinook salmon are threatened with extinction.

On April 9, l990 the National Marine Fisheries Service (NMFS) announced that a status review of Snake River fall Chinook had been initiated and that this stock had experienced such a decline in abundance that it could be found in only a fraction of its former range. The Snake River fall Chinook was listed as a threatened species on 22 April 1992.

The NMFS proposed recovery plan for Snake River salmon recommends that Lyons Ferry Hatchery should operate as a gene bank for Snake River fall Chinook and that supplementation be carefully evaluated in areas above Lower Granite Dam to determine if it can assist in recovery (task 4.1.d). The Lyons Ferry Hatchery stock was derived from native fall Chinook salmon captured in the Snake River upon completion of the Hells Canyon Dam in the 1970's thus being the reason for its "gene bank" designation. Although the hatchery stock is considered part of the Snake River fall Chinook salmon Evolutionary Significant Unit (ESU), it is not considered listed under the Endangered Species Act (ESA) because of its captive rearing history at the time of listing (NMFS 1995). The proposed recovery plan task 4.7 also recommends that Snake River fall Chinook be reintroduced into historic habitat, and that areas in the Snake River below Hells Canyon Dam and in the lower Clearwater River be considered for reintroduction.

During 1994, through *U.S. v Oregon*, an agreement was made between the four Columbia River Treaty Tribes, States and Federal agencies to replace the natural production losses from adults trapped and taken out at Lower Granite Dam with about 150,000 Lyons Ferry Hatchery yearlings to be acclimated and released upstream of the dam in 1996. Further agreements were reached to release 450,000 yearlings at acclimation facilities above Lower Granite Dam in future years as long as 450,000 are available for on-station releases at Lyons Ferry Hatchery. In addition, the agreement states that if additional Lyons Ferry fall Chinook brood production is available above the full yearling program of 900,000, then these fish shall be released off-station as sub-yearlings. The fall Chinook acclimation project is designed to incorporate sub-yearling fall Chinook salmon into the existing program.

The fisheries co-managers (*U.S. v Oregon* parties) had agreed that they should take a more active role in rebuilding the Snake River fall Chinook population within its critical habitat. Because the *U.S. v Oregon* parties largely control harvest and production issues, they revised the existing harvest agreements and production strategy to protect and encourage an increase in natural fish production. NMFS had determined that the Lyons Ferry Hatchery stock was the most

appropriate stock to use for supplementation of the fall Chinook population, yet all the fish were released at the hatchery, which is located within the Snake River reservoir complex, many miles downstream of the natural production area. The fisheries co-managers therefore decided that this stock should be released within the principal fall Chinook spawning and rearing habitat above Lower Granite Dam, to encourage an increase in natural production. The parties also agreed that an acclimated release strategy would result in a greater amount of imprinting to the release area than a direct release and thus be more effective in returning adults to the spawning area. Additionally, the parties determined that research conducted at Lyons Ferry Hatchery showed that a much higher return rate was found for fish released as yearlings versus sub-yearlings (0.04%), and thus a yearling release strategy would be most effective in returning a larger number of spawners to the release area. Since the purpose was to take an active role in increasing natural production, a greater number of spawners would best accomplish the goals. Natural-origin Snake River fall Chinook salmon migrate primarily as a sub-yearling and therefore, a strategy was implemented to incorporate sub-yearlings into the existing programs as soon as feasible because of the uncertainty regarding genetics and ecological consequences of supplementing natural production with the yearling life-history variant. The yearling and sub-yearling groups are differentially marked so that a direct comparison of both life-history types can be made.

The U.S. Congress secured funding for construction of acclimation facilities during deliberations over the FY95 budget. Congress instructed the U.S. Army Corp of Engineers (USCOE) through the Lower Snake River Compensation Plan (LSRCP) to construct final rearing and acclimation facilities for fall Chinook in the Snake River basin to complement their activities and efforts in compensating for fish lost due to construction of the lower Snake River dams. The NPT along with State and Federal agencies selected three acclimation sites. Two acclimation facilities were located on the Snake River, at Capt. John Rapids and Pittsburg Landing, and one acclimation site was located on the Clearwater River at Big Canyon. The Capt. John Rapids facility is a single pond while the Pittsburg Landing and Big Canyon sites consist of portable fish rearing tanks assembled and disassembled each year. The sites were selected because of the proximity of spawning habitat for returning adults and because of good road access. ESA consultation by both NMFS and U.S. Fish and Wildlife Service (USFWS) determined that the rearing, acclimation, and release of Lyons Ferry Hatchery fall Chinook salmon at acclimation sites on the Snake and Clearwater Rivers was not likely to affect listed Snake River sockeye salmon, Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, or their critical habitat (Stelle 1996). The NPT assumed responsibility for operation and maintenance of the facilities. The LSRCP was to fund the operations and maintenance of facilities constructed under the plan however in 1997 the decision was changed and Bonneville Power Administration (BPA) was directed to direct fund operations and maintenance (O&M) and monitoring and evaluation (M&E) for the facilities. The title of this program is the Fall Chinook Acclimation Project (FCAP). This report covers operations and maintenance activities of the Project. Results of fish survival and performance reared and released from the FCAP facilities can be found in annual reports from BPA Project # 1998-010-04 (Rocklage and Kellar. 2005a, 2005b, 2005c and Rocklage, S.J. 2005) and BPA Project # 1998-010-03 (Garcia et al. 1999,2000,2003).

1.2 Project Goals

The immediate goal of the project is a concerted effort to ensure that the Snake River fall Chinook salmon above Lower Granite Dam are not extirpated. Long-term goals of the project are:

1. Increase the natural population of Snake River fall Chinook spawning above Lower Granite Dam.
2. Sustain long-term preservation and genetic integrity of this population.
3. Keep the ecological and genetic impacts of nontarget fish populations within acceptable limits.
4. Assist with the recovery of Snake River fall Chinook to remove from ESA listing.
5. Provide harvest opportunities for both tribal and non-tribal anglers.

The extended acclimation time at each site should provide natal homing of adults to the appropriate spawning habitat and diminish the likelihood that Lyons Ferry Hatchery fall Chinook will stray into other Columbia Basin populations. Because the Lyons Ferry Hatchery stock and the listed natural-origin fall Chinook are considered to be within the same ESU (Blankenship and Mendel 1993), there are no expected adverse effects to the listed population as a result of genetic introgression from non-native stocks (NMFS 1995).

The yearling to adult return rate is expected to be equal to the Lyons Ferry Hatchery survival rate of 0.269%. A total of 1345 adults (or more) may return above Lower Granite Dam as a result of these annual releases. Sub-yearling releases at Lyons Ferry Hatchery have resulted in juvenile-to-adult survival rates of only 0.0364%. Thus, adult returns from yearling releases may be 8 times or more great than returns for sub-yearlings.

The success of the acclimation program depends upon three critical assumptions:

1. Three to six weeks acclimation is sufficient for fall Chinook salmon yearlings and sub-yearlings to imprint on the release location.
2. Smolt-to-adult survival will maintain at current levels or increase during the project.
3. Sufficient broodstock will return to Lyons Ferry Hatchery to supply 450,000 yearlings.

Monitoring and evaluation of the juvenile releases from the Fall Chinook Acclimation Facilities is being conducted by the Nez Perce Tribe through project #1998-010-04 (see Section 1.5).

1.2.1 Relationship to the 2000 FCRPS Biological Opinion

The FCAP project was termed a safety-net project in the 2000 Federal Columbia River Power System (FCRPS) Biological Opinion by Reasonable and Prudent Action (RPA) 177.

"This action funds the actual implementation and operation of safety-net projects. Depending on the planning results, specific measures may include funding modifications of existing

facilities, or construction and operation of new facilities. The obligation to fund the safety-net program, including O&M, monitoring, and evaluation, will continue indefinitely, as circumstances warrant."

1.3 Description of Project Area

The three fish acclimation sites that were identified and developed through this project were selected due to their location and proximity to historic fall Chinook salmon spawning habitat: Pittsburg Landing on the Snake River below Hells Canyon Dam, Captain John Rapids on the Snake River near the confluence with the Grand Ronde River and Big Canyon site on the lower Clearwater River (Figure 1).

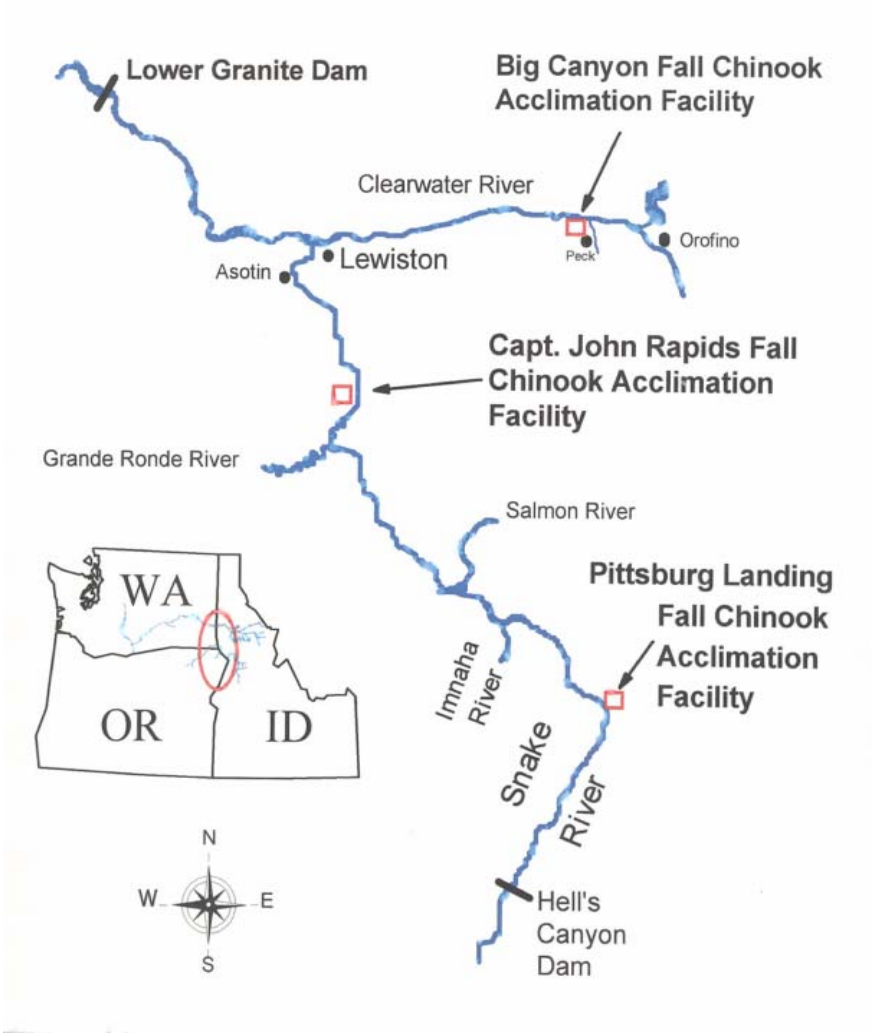

Figure 1 Map of facility locations.

Pittsburg Landing

Pittsburg Landing is located in the Hells Canyon National Recreation Area (HCNRA) near Whitebird, Idaho. The site is located on the Idaho side of the Snake River at River Mile (RM) 215, about 31 miles downstream of Hells Canyon Dam. Pittsburg Landing has the only road access to the Snake River on the Idaho side of the HCNRA suitable for passenger vehicles. Access to the site is by Deer Creek Road (U.S. Forest Service Road 433), 18 miles from US Highway 95.

Figure 2 Pittsburg Landing Facility

This site was chosen because of its location near suitable spawning and rearing habitat and good road access, which is necessary for delivery of equipment and fish. The site is a temporary acclimation facility consisting of portable fish rearing tanks assembled and disassembled each year (Figure 2).

Captain John Rapids

This site is located at Captain John Rapids on the Snake River between Asotin, Washington and the mouth of the Grand Ronde River at RM 164. The site is on the Washington side of the river, 20 miles upstream of Asotin, with vehicle access provided by the Snake River Road.

Figure 3 Captain John Rapids Facility

The site has favorable characteristics for fish acclimation that includes proximity to adult spawning habitats, has a good release point into an eddy instead of into the river current and is isolated from residences which reduces the possibility of conflicts with local citizens. The facility is a single in-ground 150'X 50’ acclimation pond with two screened intakes with submersible electric pumps, which are placed in the river each season (Figure 3).

Big Canyon

Big Canyon acclimation site is located on the lower Clearwater River adjacent to US Highway 12 near Peck, Idaho. The site is 4 miles below the confluence of the North Fork and Middle Fork of the Clearwater River at RM 35. It is located on Nez Perce Tribal allotment 992 and the site of a Clearwater River boat launch facility that was previously leased to the Idaho Department of Fish and Game.

The site was selected because it is located within the designated critical habitat area for Snake River fall Chinook and has good road access. Listed fall Chinook are known to successfully spawn in the Clearwater River both immediately upstream and downstream of the facility. The Big Canyon site is a temporary facility with fish rearing tanks and aeration towers remaining on site while water pumps and related equipment are disassembled and stored offsite each year (Figure 4).

Figure 4 Big Canyon Facility

1.4 Project History

Operation of the facilities funded by this project began in 1996, which initiated supplementation of the Snake River fall Chinook upstream of Lower Granite Dam. In 1996, the Pittsburg Landing facility on the Snake River acclimated and released 114,000 fall Chinook yearlings. In 1997, both the Pittsburg Landing facility and the Big Canyon facility on the Clearwater River were operated and resulted in 147,000 yearlings and 451,000 yearlings and sub-yearlings released respectively. In 1998, Capt. John Rapids facility on the Snake River was operational and the three-acclimation facilities resulted in releases of 336,000 yearlings. In 1999, a total of 1,198,378 fish including 528,346 yearling fish and 670,032 sub-yearling fish were released. Fish releases in 2000 totaled 2,580,816 fish and included 397,339 yearlings and 2,183,447 sub-yearlings. This report contains activities involving acclimation and release of fall Chinook juveniles from the acclimation facilities in 2001.

1.5 Relationship to other Projects

Activities that occur through the Fall Chinook Acclimation Project (FCAP) represent only the operations and maintenance (O&M), or production aspect, of the program of a larger comprehensive effort to restore Snake River fall Chinook salmon. Within this effort, in addition to the artificial production and release of fall Chinook juveniles are a number of monitoring and evaluation studies conducted by a host of fisheries management agencies (Table 1). The agencies include Washington Department of Fish and Wildlife (WDFW), U.S Fish and Wildlife

Service (USFWS), Idaho Power Company (IPC), and NPT. The associated projects are integrated and project operators work cooperatively to implement project activities, data collection and analysis, coordination, and management.

Table 1. Ongoing projects/activities associated with restoration of Snake River Fall Chinook Salmon.

Project	Agency	Funding Source	Activities
Lyons Ferry Hatchery	WDFW	Lower Snake River Compensation Plan Project # 200112, 200115, 200124,	Production of yearling and sub-yearling fall Chinook salmon for on-station releases and outplants above Lower Granite Dam.
LSRCP Fall Chinook Salmon Production and Evaluation Program	WDFW	Lower Snake River Compensation Plan Project # 200118 and 200121	Evaluate yearling and sub-yearling fall Chinook salmon released on-station from LFH. Run reconstruction of adult fall Chinook salmon returns to Lower Granite Dam.
Fall Chinook Acclimation Project	NPT	Bonneville Power Administration Project # 199801005	Acclimation and release of yearling and sub-yearling fall Chinook salmon from facilities on the Snake and Clearwater Rivers above Lower Granite Dam.
USFWS Dworshak National Fish Hatchery Fish Health Laboratory	USFWS	Lower Snake River Compensation Plan Project # 200101	Monitor health of FCAP yearling and sub-yearling fall Chinook salmon.
M&E of Yearling Fall Chinook Salmon Released From FCAP Facilities.	NPT	Bonneville Power Administration Project # 199801004	Monitor and evaluate yearling and sub-yearling fall Chinook salmon released from FCAP facilities. Spawning ground surveys – Imnaha and Grande Ronde Rivers (beginning 2003).
M&E Spawning	USFWS	Bonneville Power	M&E of spawning

Distribution of Yearling Fall Chinook Salmon Released From FCAP Facilities		Administration Project # 199801003	distribution of fall Chinook salmon released as yearlings. Spawning ground surveys – Snake , Imnaha and Grande Ronde Rivers.
Nez Perce Tribal Hatchery	NPT	Bonneville Power Administration Project # 198335000	Production of fall Chinook for release throughout the Lower Clearwater River subbasin.
Nez Perce Tribal Hatchery M&E	NPT	Bonneville Power Administration Project # 198335003	M&E of NPTH fall Chinook salmon program. Spawning ground surveys – Clearwater, Salmon and Selway Rivers.
Idaho Power Fall Chinook Program	Idaho Power Corporation	Idaho Power Corporation	Spawning Ground Surveys – Snake, Imnaha and Grande Ronde Rivers. Production of fall Chinook salmon for release in the Snake River below Hells Canyon Dam. Habitat quality in Snake River above and below the Hells Canyon Complex.

2.0 METHODS AND MATERIALS

2.1 Facilities

Pittsburg Landing

The acclimation facility at Pittsburg Landing consists of: 16 -20ft aluminum circular tanks; 2 aluminum distribution boxes; 4 river intake screens; ringlock flexible hose: 4" = 1,260 ft, 6" = 1,780 ft, 8" = 3,110 ft; camlock flexible hose: 6" = 2,080 ft; 1 - 500 gallon diesel storage tank; 1 - 20ft storage container; 2 - 30ft camp trailers; 1 - 1996 Chevy S-10 pickup; two alarm systems; 16 emergency oxygen systems - hoses, microdiffusers and regulators (1 per tank); a trailer

mounted 4,000 watt generator light plant; one utility storage trailer; 16 camouflage nets; 2 trailer mounted hydrocyclones; miscellaneous bolts, seals, camlock fittings, etc. Equipment used at Pittsburg Landing and the other two facilities was purchased by USCOE, Walla Walla under the FY95 Congressional Add-on (Senate Report, 103-672, p7).

Water is pumped directly from the Snake River to the acclimation tanks by four, 4-inch diesel pumps. Water pumps are rented from a Portland, Oregon contractor because leasing appeared to offer the least cost over a ten-year life cycle. Each pump has a portable water intake screen that is placed into the river each year and connected to the pump by 120 ft of 6-inch plastic hose. The pumps provide 500 gpm of water and operate 24 hours each day throughout the 6-week acclimation period except for oil checks and servicing. A 1,000 gallon tank, placed within a spill containment barrier, supplies fuel for the pumps. The water is pumped to one of two12 ft. high water distribution boxes, containing degassing towers to remove nitrogen gas, before flowing through a series of downsizing pipes to the rearing units.

Figure 5 Pittsburg Landing acclimation tanks.

The rearing units consist of 16 circular aluminum tanks, 20 ft in diameter and 4 feet deep. The tanks are transported from the storage area by a 20 ft flatbed lift-truck and placed on leveled 6-inch by 6-inch wood timbers. The tanks, made in two pieces and bolted together, drain water from the center of the tank through an 8-inch pipe placed in a plywood manhole running under the tank. The tank is fitted with vertical 12-inch circular perforated aluminum screen and the water depth controlled by a 6-inch center PVC standpipe. The rearing water enters the tank through a 4-inch pipe located on the edge of the tank and is directed in a manner to facilitate a circular motion to aid the movement of fish waste and mortality to the center screen. Water flow is controlled by a 4-inch gate valve located on the incoming line and maintains flows at 100 gpm. The water discharge line is connected from the tank to the river by an 8-inch flexible plastic pipe, which is also used to release the fish.

A 24-volt alarm system constantly monitors water levels in each rearing tank and each of the two water distribution towers. An enunciator panel that provides a visual and audio alarm when a low water level is detected monitors the alarm system. The alarm control box and enunciator panel is located near the staff-housing trailer.

Assembly of the acclimation site begins in February each year with the transport of equipment and material from an offsite storage area. The U.S. Forest Service (USFS) agreed, in 1998, to allow the NPT to leave assembled fish rearing tanks and related equipment at a storage site near the fish acclimation site. This agreement has resulted in considerable dollar savings, greatly reduced equipment fatigue and reduced assembly and disassembly time by half.

Big Canyon

The Big Canyon facility uses identical or similar equipment to that of Pittsburg Landing. The rearing tank assembly has been changed over the years to include a single row of tanks that sit flat on the gravel surface. The center drain line is located in a trench dug under the tank, thus eliminating the need for 12-inch deep gravel pad that was previously used. This method can only be used where the proper elevation is available to facilitate water discharge to the river.

The COE has agreed to furnish electric pumps to replace the diesel units that are rented each year. The electric pumps should provide the same performance as the diesel pumps while reducing rental and maintenance costs, allowing an onsite staff reduction and eliminate the risk of a major fuel spill. Pump replacement is scheduled before the 2002 acclimation season.

FCAP Project Leader is preparing a lease agreement with the Nez Perce Tribe that would allow the fish rearing tanks and water distribution tower to remain assembled at the site the entire year. This would eliminate the need for an assembly and disassembly contract and reduce equipment fatigue hence provide dollar savings to the program.

Capt. John Rapids

The Capt. John Rapids Fall Chinook Acclimation Facility is a single 150'X50' in-ground, lined pond that is supplied with Snake River water by two independent 1,000 gpm submersible electric pumps. Other facility equipment and capital construction consists of: 2 river intake screens; one camp trailer; one standby propane generator; one water well (domestic water); septic system; commercial electric service; alarm system; telephone service. The pumps and intake screens were designed to be placed into the river and then removed following fish acclimation each year but were replaced in 2001 with permanent intake screens located in the main Snake River channel (see facility improvements). The pump intake screens are provided with an air backflush system to remove debris and an alarm system is available to monitor flows.

The pumps continue to be inadequate to provide the water necessary to provide the water volume and quality required for acceptable fish culture rearing standards. The alarm system does not provide accurate data, if working at all. Negotiations are ongoing with the USCOE to provide the necessary changes to meet the standards required at the facility.

2.2 Operations

Assembly

No contractor is used for the assembly and disassembly of the portable tanks and associated equipment at Pittsburg Landing and Big Canyon sites. The facilities are assembled and disassembled using FCAP staff members and equipment. This effort reduces project costs and assures that facility assembly is consistent with fish rearing, acclimation and fish release goals.

Actual assembly of the temporary acclimation facilities begins in January and testing of the facilities completed by the last week of February. The Pittsburg Landing and Big Canyon facilities begin operation in March of each year and the Capt. John Rapids facility begins operation in February to allow for sub-yearling production at Lyons Ferry Hatchery.

Staffing

A two person crew works an 8-day on and 6-day off schedule. Crew members work 10 hours each day but are required to remain on site 24 hours to monitor the pumps and alarm system. Staff members live in an on-site travel trailer and receive a per diem allowance for food and personal items. Staff members are supervised by a project foreman who makes periodic visits to the site and have a radio-telephone for communications. Written schedules, manuals and oral instructions guide staff members. Some employees work 6 months on the project to assist in assembly, operations and disassembly while others work from 6 to 12 weeks during fish acclimation. Employees move to other projects immediately following the completion of operations.

Fish transport

Up to 150,000 fall Chinook salmon yearlings are transferred from Lyons Ferry Hatchery to each facility on or about 01 March, at a size of approximately 12 fish per pound. If sub-yearlings are available, up to 500,000 are transferred to each facility at 90 fpp in late April-early May. Priority release sites for sub-yearlings are: 1. Big Canyon, 2. Capt. John Rapids and 3. Pittsburg Landing. WDFW and NPT fish distribution vehicles share fish transport to all the acclimation facilities. Lyons Ferry Hatchery personnel provide schedules and facilitate loading and enumeration of the fish. Fish transport permits are requested and received before fish are distributed.

Figure 6 Fish Transport

Fish culture

Figure 7 Fish Culture

Staff perform daily scheduled fish culture duties that includes: checking and recording oxygen levels in the rearing units three times each day, feeding the rearing units three times each day and picking fish mortality twice each day. Staff also observes fish behavior for abnormalities and assist in fish health checks and the fish-marking program. The fish are fed a semi-moist pellet manufactured by Bio-Oregon of Warrenton, Oregon. Fish culture methods are the same as per Integrated Hatchery Operations Team (IHOT) guidelines and consistent with WDFW fish culture techniques at Lyons Ferry Hatchery. The NPT-DFRM Production Division Director reviews any changes to standard procedures and other agencies are consulted if necessary. Environmental precautions are necessary to handle diesel and oil for the portable water pumps.

Yearling fish are reared and acclimated in the temporary facilities for six weeks (10 weeks at Capt. John Rapids) before release into the Snake and Clearwater Rivers in April, at a size of approximately 10 fpp, or 160-170 mm fork length. Sub-yearling fish are reared and acclimated approximately four weeks for group 1 and two to four weeks for group 2 before release into the river in June, at 60 fpp. Release typically occurs during rising water conditions, at the same time or slightly preceding fall Chinook salmon releases at Lyons Ferry Hatchery, and at night to minimize predation by birds or other fish.

Fish health

Fish health services are provided by contract with the USFWS, Dworshak Fish Health Center (DFHC). The contract provides diagnostic and pathogen survey services for all fall Chinook juveniles and smolts transported to the fish acclimation facilities. The services include a fish health check before transfer, bi-weekly exams during acclimation and a pre-release exam. Other health checks are performed as requested. Fish health protocols are as per AFS Blue Book, IHOT and Nez Perce Tribe fish health protocols.

3.0 2001 OPERATIONS

3.1 Introduction

This report consists of activities conducted during 2001 at fall Chinook acclimation projects Pittsburg Landing (98-010-05), Big Canyon (98-010-08) and Capt. John Rapids (98-010-07).

The report is submitted by Bruce McLeod, Project Leader of the Fall Chinook Acclimation Project (FCAP). The project leader facilitates the implementation and completion of all task activities set forth in the project plan. The project leader was given the authority to define, implement and oversee all methods, protocols and procedures for assembly, operation and disassembly of the Pittsburg Landing, Big Canyon and Capt. John Rapids sites.

Water flows from Basin snowpack runoff in 200l was near record lows with only 58.6 million acre feet (maf) compared with an average runoff of 103 maf. The Columbia River Basin had only 52 percent of normal snow in 2001 which related to very low river flows during fish acclimation and release.

3.2 Administrative

Preparations for the 2001 fall Chinook acclimation season began in November 2000 with the ordering of supplies, assembly of staff, writing consultant contracts, ordering new equipment, designing equipment experiments and consulting with the USCOE on facility improvements.

The Assistant Project Leader position was filled with a full time employee this year instead of a shared FTE. This position supervises the assembly and disassembly of the facilities and the daily activities of staff members.

Staff members assisted with outplanting of surplus adult salmon and steelhead that returned to the Clearwater and Salmon River fish hatcheries this year. The surplus fish are transported to under-seeded streams in the Clearwater River drainage and released in an effort to improve natural fish populations. A total of 2,510 steelhead and 7,672 adult spring Chinook salmon were transported and released. Staff members made 38 transport trips and traveled 12,300 miles.

The 2001 budget process began in April 2000 with the submission of the Bonneville Power Administration Fish and Wildlife Program FY 2001 Budget update form. In the 2001 budget process, the Columbia Basin was divided into ecological provinces and each project assigned to a principal province and subbasin instead of the previous subregion designation. The Fall Chinook Acclimation Program was placed in the Blue Mountain province and Mainstem Snake subbasin. The 2001 budget update form was reviewed by the Independent Scientific Review Panel (ISRP) for the Northwest Power Planning Council (NWPPC) and the Columbia Basin Fish and Wildlife Authority (CBFWA). Project funding levels were recommended to the council by both ISRP and CBFWA. The CBFWA/ISRP/Council final review of the fiscal year 2001 project proposals provided specific funding recommendations to BPA in December 2000.

Task orders for the three projects were received from BPA on or about 10 April 2001. The Big Canyon 2001 budget was $257,884 with an additional $164,996 in authorized carry-over funds for equipment purchases and consultant & contracts. The Capt. John Rapids 2001 budget was $211,301 with carry-over of $81,000 and the Pittsburg Landing 2001 budget was $220,641 with $137,500 carry-over. Carry-over funding is provided to complete purchases of equipment and contractual projects that could not be done in previous fiscal years because of justified constraints.

The Lyons Ferry Annual Operating Plan (AOP) draft was completed on 13 September 2000 and distributed by the Snake River Lab of WDFW. Nez Perce Tribe Fisheries management personnel attended the coordination meeting of 05 October 2000. Attachment 1 to the AOP summarizes the NPT plan of activities for the FCAP facilities in 2001. The plan covers activities at Lyons Ferry Hatchery from 01 October 2000 to 30 September 2001.

Fall Chinook coordination meetings were held on 04 March and 29 August 2001. Attendees included personnel from WDFW, NPT, USFWS, and IPC. The meetings give the cooperators an opportunity to plan research and fish production/acclimation programs, share information and exchange ideas.

The 1998 special use permit with the USFS to operate the Pittsburg Landing facility was continued into 2001 by agreement of both parties.

3.3 Facility Assembly

The Assembly and disassembly of the facilities in 2001 was done by FCAP personnel using equipment purchased by and shared with the Nez Perce Tribal Hatchery (project ID 83-350-00). This effort results in saving dollars that can be spent to improve other areas of the project needing improvements and equipment purchases. Assembly work on the acclimation sites began at Pittsburg Landing 29 January and completed 24 February at Big Canyon.

3.4 Equipment Operation/Testing

Equipment experiments that were tested during the 2001 acclimation season include:

1. Evaluate performance of the new water intake system and pumps at Capt. John Rapids. It is proposed that the new location will provide a greater volume of water than the old intake system even on the lowest flow years

Results: The new water intake system provided water during the entire acclimation period despite record low flows in the Snake River. The pumps were unable to supply an adequate amount of water needed to meet the required water flow and water chemistry standards established for the fish acclimation facility. FCAP personnel are working with the USCOE to address the problem before the 2002 acclimation season.

As a result of equipment testing in 2000, wood timbers are being used as supports under the 20

ft. circular fish acclimation tanks at Pittsburg Landing instead of the gravel pads previously used. The wood timbers eliminate the need to haul gravel to the acclimation site, build the support pads and haul the gravel back to the storage area. Considerable savings in time and money will be realized.

3.5 Fish acclimation

The yearling fish at Lyons Ferry hatchery had a high incidence of Bacterial Kidney Disease (BKD) and related mortality that dramatically reduced the number of fish available for transfer to the acclimation sites this year. The number of yearlings transferred to the acclimations sites was 27% below the number programmed.

Fish health exams indicated that the incidence of Bacterial Kidney Disease (BKD) in the yearling fish at the acclimation sites was higher than the past two years. Mortality during acclimation was 2.37% and appeared to be BKD related with most morbid fish having visual symptoms of the disease. BKD was not diagnosed in fish health samples of sub-yearling fish, probably because of the smaller size of the fish.

Pittsburg Landing

A total of 105,988 yearling fish @ 11.3 fpp (9,342 lbs.) were received on 05-07 March 2001 at the Pittsburg Landing facility. Fish health exams and fish production reports indicated that all the yearling fish were experiencing above average mortality prior to transport. Following six weeks of acclimation, 103,741 fall Chinook yearlings were released from the Pittsburg Landing facility into the Snake River on 10-12 April 2001 (Table 2). These fish were all marked with an adipose fin clip, a Coded Wire Tag (CWT 63-04-79) and a Green Visual Implant Elastomer (VIE) tag near the right eye. Passive Integrated Transponder (PIT) tags were also implanted into 9,943 fish released from this group

A total of 375,795 sub-yearlings were received 07-08 May. An additional 25,000 sub-yearlings died in one transport tank because the oxygen supply failed. A total of 374,070 sub-yearling fish were released on 28 May 2001 after three weeks of acclimation because of low water flows from Hells Canyon Dam. There were 197,182 fish in this group with CWT (63-02-72) and 1,974 PIT tagged fish.

Big Canyon

A total of 116,267 yearling fish @ 12.4 fpp (9,376 lbs.) were received at the Big Canyon facility from 05-07 March 2001. Approximately 113,215 fall Chinook yearlings were released from the Big Canyon facility into the Clearwater River on 09-11 April 2001 (Table 2). These fish were all marked with an adipose fin clip, a CWT (63-04-77) and a green VIE tag near the left eye. This release group contained 7,499 PIT tags.

A total of 501,260 sub-yearling fish at 67.8 fpp (7,393 lbs.) were received at Big Canyon facility on 08-09 May and acclimated for 3 weeks. A total of 499,606 sub-yearlings were released on 29

May 2001 (Table 2). There were 196,507 fish with CWT (63-02-71) in this group of fish and 2,027 were PIT tagged.

A second group of 361,220 sub-yearlings at 89.8 fpp (4,023 lbs) were received on 31 May and acclimated for only two weeks due to warm river water temperatures and predicted low river water flows. A total of 357,362 sub-yearlings were released into the Clearwater River on 13 June 2001. There were no external marks on this group of fish however; 2,495 were PIT tagged.

Capt. John Rapids

Yearling fish were transferred to the Capt. John Rapids facility on 12 February to allow Lyons Ferry Hatchery rearing space for the sub-yearling group on hand this year. The fish scheduled for transfer to Capt. John Rapids were held at Lyons Ferry in separate raceways that had BKD related mortality ranging from low to very high. Only those raceways with low to moderate mortality were transferred on 12 February (70,819) because of the difficulty of removing fish mortality from the pond at Capt. John Rapids. The rest of the fish (33,652) scheduled for acclimation at Capt. John Rapids were transferred to the facility on 16 March. The incidence of BKD coupled with the long acclimation season (10 weeks) and low oxygen due to reduced water flows resulted in heavy mortality and poor fish condition of those that were released

A total of 104,741 yearling fish @ 12.5 fpp (8,379 lbs.) were received at the Capt. John Rapids acclimation. The fish received showed visual signs of Bacterial Kidney Disease (BKD) that was verified by fish health exams throughout the acclimation period. Following ten weeks of acclimation, approximately 101,976 yearling fish were released into the Snake River on 13 April 2001 (Table 2). These fish were all marked with an adipose fin clip, a CWT (63-04-78), and a blue VIE tag near the left eye. PIT tags were implanted in 2,518 fish in this release group.

Transport of 501,440 sub-yearling fish @ 59.0 fpp (8499 lbs) to the Capt. John Rapids facility occurred on 10 May. These fish were acclimated for 3 weeks and a total of 501,129 sub-yearling fish were released into the Snake River on 26 May 2001 (Table 2). These fish were all released unmarked except for 1,998 PIT tags.

Table 2. Summary of fall Chinook juveniles reared, acclimated and released from the Fall Chinook Acclimation Project facilities in 2001.

Facility	Number Received at Facility	Age	Size at Release (fpp)	Date Received	Number Released from Facility	Date Released	Survival to release (%)
Pittsburg Landing	105,988	1+	11.3	3/5-7/01	103,741	4/9-11/01	97.9%
Big Canyon	116,267	1+	12.4	3/5-7/01	113,215	4/9-11/01	97.4%
Capt. John	104,741	1+	12.5	2/12-3/16/01	101,976	4/13/01	97.4%
Total Yearling	*326,996*				*318,932*		*97.5%*
Pittsburg Landing	** 375,795	0+	105.0	5/28/00	374,070	5-28/01	99.6%
Big Canyon	501,260	0+	67.8	5/29/00	499,606	5/29/01	99.7%
Big Canyon	361,220	0+	89.8	6/13/00	357,362	6/13/01	99.0%
Capt. John	501,440	0+	59.0	5/26/00	501,129	5/26/01	99.9%
Total Sub-yearling	*1,739,715*				*1,732,167*		*99.6%*
** 25,000	Transport loss						
2001 Total					2,051,099		

A total of 2,051,099 fish weighing 59,647 pounds were released from the three acclimation facilities. The total includes 318,932 yearling fish weighing 31,128 pounds and 1,732,167 sub-yearling fish weighing 28,519 pounds. A complete production summary, including marking information, is provided in Appendix A.

3.6 Facility Disassembly

Disassembly of the acclimation tanks and related equipment at Pittsburg Landing was completed by FCAP staff members. The USFS agreed, in 1998, to allow the Nez Perce Tribe to leave assembled fish rearing tanks and related equipment at a storage area near the fish acclimation site. This agreement has resulted in considerable dollar savings, greatly reduced equipment fatigue and reduced assembly and disassembly time by half.

Nez Perce Tribal Fisheries personnel received verbal permission from the Nez Perce Tribe which allows the fish acclimation tanks and related equipment to remain at the Big Canyon acclimation site. Leaving the tanks at the site each year provides the same benefits as at Pittsburg landing but with additional dollar savings because annual assembly and disassembly of the tanks is not necessary.

3.7 Major Problems

On 14 February a major water leak developed in the Capt. John Rapids fish acclimation pond. A large sink hole appeared in the pond near the west concrete head wall. The water leak was greater than could be handled by the ponds perimeter drain and began to wash away the dirt pond dike. Staff members placed a sheet of plastic over the hole and secured it with150 sand bags to reduce the water leak. The water level in the pond was reduced and coupled with the sand bags reduced the water leak to a volume that could be handled by the pond perimeter drain. The pond water leak was repaired by Huett Construction on 20 April following release of the yearling fish.

The number 2 water supply pump at Capt. John Rapids quit working two hours after the yearling fish were released. It was determined that the pump grounded out due to an electrical problem and would have to be replaced. The COE contracted with Huett Construction to replace the pump on 07 May before arrival of the sub-yearlings. A new switching panel for the standby generator was also replaced at the same time.

Mechanical and operational problems at the acclimation sites threatened fish survival. Many overtime hours were required by staff members to answer alarms and respond to ever changing environmental conditions.

At Pittsburg Landing, one transport tank of fish (25,000) was lost during transport due to faulty oxygen air stones and operator error. Snake River water levels fluctuated widely during the sub-yearling acclimation period (from 8000cfs to 27,000cfs) as Idaho Power Company tried to control water levels in the Hells Canyon Dam Complex. Water pump intake screens plugged with floating algae causing numerous water alarms throughout the acclimation period. Staff members were forced to physically brush the algae from the screens periodically throughout the day and night, often forced to pull the screens closer to shore in an effort to reach the screens with brushes and then having to drag them back out into the river as flows were suddenly reduced.

At Capt John Rapids, sub-yearling fish were subject to low oxygen levels throughout the acclimation period as river water pumps cannot supply the amount of water needed to provide optimum fish rearing parameters.

Big Canyon experienced some high river flows during acclimation of the first group of sub-yearlings but staff members were able to maintain near normal water flows to the acclimation tanks. The Koch rings located in the areation towers had to be cleaned or removed from the towers because of plugging with debris. The second group of sub-yearling fish were only acclimated two weeks in order to release during optimum river water flows. River water flows were below average during the acclimation period despite periods of excessive water and did not provided sufficient flows for fish migration at any acclimation site.

Several mechanical and operational problems that will require modification and construction were noted during fish acclimation. At Capt. John Rapids the river pumps are undersized for the

lift required from their new location. The problem will require replacing the pumps with larger units before the next acclimation season. FCAP staff has requested that the USCOE replace the diesel water pumps at Big Canyon with electric units to increase pump efficiency and reduce the possibility of a diesel fuel spill.

3.8 Facility Improvements

The USCOE continued to address modifications needed to correct operational deficiencies at the Capt. John Rapids facility. In January 2001, Heuett Construction of La Grange, Oregon completed the in-river construction phase of the new water intake system located upstream of the fish acclimation pond and within the main river channel. Two water intake screens were placed in the river and two pumps, removed from the old float water intake system, were placed within the screens. This project began in December 1999 and halted 01 May 2000 until the in-river work could be done. The project included relocating the trailer residence, air compressor, removal of old water intake floats and related winch cable system, new underground electrical cables and installation of water distribution pipes for the new intake system.

Staff members began remodeling an abandoned office trailer located adjacent to the fisheries production office trailer for use by FCAP, Trout Ponds and Harvest Management for staff offices. The facility will also have a conference room that can be used by fisheries and other tribal departments. Remodeling was started in December and was completed in early January, 200l.

A contract was awarded to Limestone Enterprises to expand the Big Canyon acclimation site area by placing rock and dirt fill material in low areas not previously used. The new area will be used to store equipment and drill a domestic well. A septic system was placed beneath the fill dirt to be used for staff trailers when domestic water becomes available.

At Capt. John Rapids, staff personnel placed two standby diesel water pumps and plumbed them into the old water supply lines located at the lower end of the pond in an effort to assure a water supply if the new water supply system should fail. Staff also installed a 12 volt alarm system as backup to the alarm system supplied by the COE which has not had a history of success.

4.0 FY 2001 OBJECTIVES AND TASKS

OBJECTIVE 1. COORDINATION/PLANNING:

The Nez Perce Tribe formally and informally consulted with all the Fall Chinook Acclimation Project cooperators. NPT staff improved coordination and information exchange this fiscal year.

The project represents a cooperative effort between the Nez Perce Tribe, State and Federal agencies.

Task 1.1 Coordinate with WDFW to arrange for the transfer of 450,000 yearlings (150, 000 yearlings to each of three facilities). Provide release summaries and other information toWDFW to assist in the M&E of releases from all three facilities.

Response: Fish transfers this year included one group of yearlings and sub-yearling to Pittsburg Landing and Capt. John Rapids and one group of yearlings and two groups of sub-yearlings to Big Canyon. The Nez Perce Tribe provided trucks and staff to assist WDFW with the fish transfers. Release summaries were finalized and distributed to WDFW and other cooperators. WDFW provides a copy of the Lyons Ferry monthly production summary which allows FCAP staff to track fish numbers, size and condition.

Task 1.2: Coordinate with USFWS to collect pre-release fish health samples, securing a fish transport permit from IDFG, and M&E of Pittsburg Landing releases.

Response: A cooperative agreement with the USFWS Upper Columbia Fish Health Lab provides for the collection of pre-release fish health samples and routine fish health exams during acclimation. Fish health exams were conducted at Lyons Ferry Hatchery prior to fish transport to the three acclimation facilities, weekly exams conducted during the acclimation period and a final health exam conducted before fish releases at all the facilities. Fish health personnel provided diagnostic exams during suspected disease outbreaks at Big Canyon and Capt. John Rapids.

Fish transport permits, dated 12 January and 23 April 2001, were received from Idaho Fish and Game.

USFWS personnel have been represented at all M&E meetings and discussions. USFWS personnel did not PIT tag at Pittsburg Landing this year but did conduct redd surveys.

Task 1.3: Coordinate with NMFS to ensure that the planned activities as presented in the biological assessments are adhered to and include NMFS in the review of changes to planned production that may affect listed stocks.

Response: Coordination between NMFS and the Nez Perce Tribe is an ongoing process through *U.S. v Oregon* PAC meetings. Production changes during the 2001 acclimation season were a result of fish health and water conditions at the facilities and included consultation with

all cooperators.

Task 1.4: Coordinate with LSRCP to facilitate transport of the yearlings and sub-yearling fish.

Response: Transportation by LSRCP trucks was not needed this year. Fish transport was provided by WDFW and Nez Perce Tribe fisheries department.

Task 1.5: Participate in *U.S. s Oregon* PAC, to keep them informed of activities in these facilities and changes in planned actions.

Response: The Nez Perce Tribe is represented in *U.S. v Oregon* PAC, and presents any requested changes in planned actions to the members for consideration.

Task 1.6: Coordinate with USFS to renew the Special Use Permit to operate the temporary acclimation facility at Pittsburg Landing.

Response: Permit was extended by verbal agreement between NPT and USFS.

Task 1.7: Coordinate with NPT M&E projects 98-010-01 and 98-010-04 on fish rearing and release protocol to facilitate the fish monitoring program.

Response: Coordination with M&E projects during the quarter required continuous contact to facilitate the numerous production changes due to river water conditions. Cooperation from the M&E projects was excellent and provided the best rearing and release strategy for fish survival.

OBJECTIVE 2. FACILITY DEVELOPMENT:

Task 2.1: Work with the USCOE, Walla Walla, and their contractors to modify the facility and equipment at Capt. John Rapids and schedule an operational test before fish transport.

Response: FCAP staff members continue to work with USCOE in an effort to complete facility modifications. Work on the installation of new river water pumps was completed in January and used during the 2001 acclimation season. A full operational test was not possible before fish transport due to required modifications and equipment failures.

Task 2.1.1: Closely monitor and ensure all elements of construction are consistent with fish rearing, acclimation and release goals.

Response: FCAP staff members are unable to operate all components and accessories of the facility and, as a result, have not established the appropriate protocols, methods and procedures required to generate the specific output needed to access the fish rearing, acclimation and release goals of the facility.

Task 2.1.2: Test the river intakes prior to installation and facilitate modification if necessary.

Response: Testing of the river intakes was completed during the 200l acclimation season following installation of new river pumps.

Task 2.1.3: Become familiar with the operation and maintenance of all parts of the facility before the contractor is released.

Response: When construction of the new water intake system and related work is completed, training to operate the river intakes and a modified alarm system will be necessary.

Task 2.2: Work closely with the USCOE to facilitate the design and installation of pumps at Big Canyon acclimation facility.

Response: Pump design and installation is scheduled to be completed before the 2002 fish acclimation season. Installation of 3-phase underground electrical line to the pump site was completed in 05 September 2001.

Task 2.3: Determine the feasibility of relocating the Pittsburg Landing acclimation facility to a permanent location near the temporary site to reduce assembly costs and increase fish survival.

Response: Nez Perce Tribe fisheries staff members met with the USFS personnel (Hells Canyon National Recreation Area) concerning a permanent site for the Pittsburg Landing fish acclimation facility but have not received an official response at this time.

Task 2.3.1: Site investigations for permanent Pittsburg Landing facility including initial road design work, schematic facility design and cultural resource survey(s).

Response: No work has been done on this task pending approval from cooperators.

Task 2.3.2: Initiate NEPA work contingent on task 2.3.1

Response: No work has been done but money remains in the budget pending approval.

OBJECTIVE 3. OPERATIONS AND MAINTENANCE:

Task 3.l: Solicit bids and select a contractor to install the portable tanks and associated equipment at the three sites.

Response: No contractor was used for assembly this year. The facilities were assembled and disassembled using FCAP staff members and equipment.

Task 3.2: Work with the facility assembly contractor to ensure that the tanks and associated equipment are transported and installed correctly. Install water pumps at Capt. John Rapids.

Response: See task 3.1.

Task 3.3: Prior to fish transport, test the facilities for one week to identify faulty components.

Response: Testing of facilities was completed at Big Canyon and Pittsburg Landing but could not be completed at Capt. John Rapids because water pumps were not installed in time.

Task 3.4: On or about 01 March 2001, receive at each facility, 150,000 yearlings @ 12 fpp, and rear to 10 fpp for release on or about 15 April. If sub-yearlings are available, rear up to 500,000 per site and release on or about 01 June.

Response: Received 326,996 yearling fish @ 12.1 fpp between 12 February and 16 March 2001. The fish exhibited clinical symptoms of BKD with accompanying mortality. Fish health exams confirmed the presence of the disease.

Received 1,739,315 sub-yearling fish @ 74.0 fpp between 07 May and 31 May 2001. Fish health exams confirmed the presence of BKD but the fish did not exhibit clinical symptoms of the disease and mortality was light during acclimation.

Task 3.4.1: Collect and record all criteria relevant to fish rearing, e.g. feed use, mortality, fish health checks, oxygen levels, nitrogen saturation, etc.

Response: Relevant fish rearing data and parameters is collected and recorded daily. Staff members are diligent in assuring pertinent data is assembled. Fish health exams are performed weekly.

Task 3.5: Upon release of fish, monitor the disassembly of the facility and check that equipment is properly stored.

Response: Task was completed in the 2001-second quarter.

Task 3.6: Critique the assembly, operation and disassembly of the facilities to improve operations and reduce costs.

Response: Task was completed in the 2001-second quarter. Several changes are planned for the 2002 acclimation season including using electric pumps at Big Canyon, and new pumps at Capt. John Rapids.

Task 3.7: Repair and replace equipment as needed (e.g. paint tanks, winterize pumps and travel trailers).

Response: Staff members began repairs immediately after disassembly of the acclimation sites. Equipment is repaired, serviced, stored or replaced with new if necessary. Equipment service, repair and replacement consume numerous staff days each year.

OBJECTIVE 4. REPORTS:

Task 4. 1: Submit quarterly progress reports based on the objectives and tasks contained within the statement of work, within 30 days following the quarter.

Response: Quarterly report submitted as required.

Task 4.2: Submit a final operational report of all activities for all three facilities by 01 February 2002 to include: numbers of fish released, procedures, daily observations (morts, etc), problems, operational changes, cost summaries, location of information concerning monitoring activities, copies of permits, and recommendations.

Response: A final report will be submitted as required.

5.0 SUMMARY

The 2001 fall Chinook fish acclimation program successfully released a large number of fish however; fish health of the yearling fish received and released was poor. A total of 318,932 yearlings and 1,732,167 sub-yearling fish were released from the three-acclimation sites. The number of yearlings released was 29% below the program goal because of BKD related mortality at the Lyons Ferry hatchery and during acclimation. The acclimation time for the sub-yearlings was reduced one to two weeks because of low water flows in both the Snake and Clearwater rivers.

The limited snow pack in the Snake and Clearwater River basin resulted in water flow problems at all three acclimation facilities. The Columbia River Basin had only 52 percent of normal snow in 2001 which related to very low river flows during fish acclimation and release.

Mechanical and operational problems at the acclimation sites threatened fish survival. Many overtime hours were required by staff members to answer alarms and respond to ever changing environmental conditions. FCAP staff and the USCOE continue to address the mechanical and operational problems.

Table 3. Summary of juvenile fall Chinook salmon released from the Fall Chinook Acclimation Project 1995-2001.

Year	# of yearlings released	# of sub-yearlings released	# of FCS adults over LGR	# of FCS jacks over LGR	# of FCS redds in Clearwater R.	# of FCS redds in Snake R.
1995			1,067	308	20	65
1996	114,299		1,308	424	69	104
1997	345,769	252,705	1,451	504	72	58
1998	336,191		1,909	2,002	78	185
1999	529,503	670,033	3,384	1,863	184	373
2000	397,339	2,183,447	3,602	7,112	180	346
2001	318,932	1,732,167	8,915	8,834	336	770

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7.0 APPENDICES

Appendix A: 2001 Fish Production Summaries

Lyons Ferry Hatchery fall chinook releases above Lower Granite Dam in 2001 (data compiled by Bill Arnsberg, Steve Rocklage and Bruce McLeod, Nez Perce Tribe).

Release Type		Release Location	Release Dates	Number ad-clipped w CWT	CWT Code	Number ad-clipped w/o CWT	Number CWT w/o ad-clip	Number Unmarked w/o CWT	Number PIT tagged	Gms/fish	Fish/Lb	Total Lbs	Avg FL	CV of Avg FL	Elastomer (side, color/ retention %)*
Age	Brood Year														
1+	1999	Pittsburg	4/10-12	102,980	63-04-79	0	761	0	7,503	43.5	10.4	9,949	156.2	10.5	RG/86.7
		Total number of yearlings released at Pittsburg Landing: 103,741													
		Captain John	4/4-13	100,461	63-04-78	505	1,010	0	2,518	44.8	10.1	10,072	155.4	10.5	LB/88.9
		Total number of yearlings released at Captain John: 101,976													
		Big Canyon	4/9-11	112,933	63-04-77	188	94	0	7,499	44.5	10.2	11,107	157.0	10.5	LG/94.6
		Total number of yearlings released at Big Canyon: 113,215													
0+	2000	Pittsburg	5/28	0	63-02-72	0	197,182	176,888	1,974	5.4	84.1	4,446	79.9	9.8	None
		Total number of sub-yearlings released at Pittsburg: 374,070													
		Big Canyon	5/29	0	63-02-71	0	196,507	303,099	2,027	8.5	53.3	9,375	95.1	6.0	None
			6/13	0	0	0	0	357,362	2,495	5.8	78.2	4,569	83.6	8.8	None
		Total number of sub-yearlings released at Big Canyon: 856,968 (499,606 1st group, 357,362 2nd group)													
		Captain John	5/26	0	0	0	0	501,129	1,998	9.2	49.5	10,129	97.6	7.5	None
		Total number of sub-yearlings released at Captain John: 501,129													

*Note: Elastomer tag behind eye. Side/color: RG=Right/Green, LG=Left/Green, LB=Left/Blue

Appendix B: Acclimation Site Fish Inventories

Nez Perce Tribe
Inventory - Pittsburg Landing Acclimation Facility
2001 Fall Chinook Yearling

Received	27,888	fish on 3/5/01						**Released**	33,683	fish on 4/10/01	
	48,728	fish on 3/6/01							35,342	fish on 4/11/01	
	29,372	fish on 3/7/01							34,716	fish on 4/12/01	
Total	**105,988**							**Total**	**103,741**		

Tank	Starting Inventory	Morts	Pre-release Sample	Inventory	Percent Mortality	Date Received	FPP *	Release Date	FPP **	Days Acclimated
1	6,962	80	0	6,882	1.15	03/06/01	11.8	04/12/01	10.60	37
2										
3	6,962	50	0	6,912	0.72	03/06/01	11.8	04/12/01		37
4	6,962	78	0	6,884	1.12	03/08/01	11.8	04/12/01		35
5	6,962	59	0	6,903	0.85	03/06/01	11.8	04/12/01		37
6	7,198	63	0	7,135	0.88	03/07/01	11.8	04/12/01	9.78	36
7	6,956	199	0	6,757	2.86	03/06/01	10.9	04/11/01		36
8	8,248	66	0	8,182	0.80	03/07/01	11.8	04/11/01		35
9	6,966	354	0	6,612	5.08	03/05/01	10.9	04/11/01		37
10	6,964	67	0	6,897	0.96	03/07/01	11.8	04/11/01	9.48	35
11	6,962	68	0	6,894	0.98	03/06/01	11.9	04/11/01		36
12	6,962	37	0	6,925	0.53	03/06/01	11.9	04/10/01		35
13	6,962	84	0	6,878	1.21	03/06/01	11.9	04/10/01		35
14	6,966	336	0	6,630	4.82	03/05/01	10.7	04/10/01	10.18	36
15	6,987	362	0	6,625	5.18	03/05/01	10.7	04/10/01		36
16	6,969	344	0	6,625	4.94	03/05/01	10.8	04/10/01		36
	105,988	**2,247**	**0**	**103,741**	**2.12**			**Avg. FPP**	**10.65**	

* Sample sizes ranged from 10.26 to 13.0 fpp.
** PIT tag sampling, 4 tanks only to minimize stress, one week prior to release.

Nez Perce Tribe
Inventory - Pittsburg Landing Acclimation Facility
2001 Fall Chinook SubYearling

Received	275,679	fish on 5/7/01				**Released**	374,070	fish on 5/28/01			
	100,116	fish on 5/8/02									
	Total	**375795**				**Total**	**374,070**				

Tank	Starting Inventory	Morts	Pre-release Sample	Inventory	Percent Mortality	Date Received	FPP *	Release Date	FPP **	Days Acclimated
1	25,038	116	0	24,922	0.46	05/07/01	107.0	05/28/01	84.10	21
2	25,038	62	0	24,976	0.25	05/07/01	107.0	05/28/01		21
3	25,075	183	0	24,892	0.73	05/07/01	105.0	05/28/01		21
4	25,038	109	0	24,929	0.44	05/07/01	107.0	05/28/01		21
5	25,075	99	0	24,976	0.39	05/07/01	105.0	05/28/01		21
6	25,038	96	0	24,942	0.38	05/07/01	107.0	05/28/01		21
7	25,075	70	0	25,005	0.28	05/07/01	105.0	05/28/01		21
8	25,029	83	0	24,946	0.33	05/08/01	103.0	05/28/01		20
9	25,075	130	0	24,945	0.52	05/07/01	105.0	05/28/01		21
10	25,029	85	0	24,944	0.34	05/08/01	103.0	05/28/01		20
11	25,029	119	0	24,910	0.48	05/08/01	103.0	05/28/01		20
12	25,029	62	0	24,967	0.25	05/08/01	103.0	05/28/01		20
13	*									
14	25,075	79	0	24,996	0.32	05/07/01	105.0	05/28/01		21
15	25,075	88	0	24,987	0.35	05/07/01	105.0	05/28/01		21
16	25,077	344	0	24,733	1.37	05/07/01	105	05/28/01		21
	375795	**1725**	**0**	**374070**	**0.46**		105.0	**Avg. FPP**	**84.1**	

CWT Code 63-02/72 (201,006)
** PIT tag sampling, 4 tanks only to minimize stress, one week prior to release.
* Shipping-loss of 25,000 sub's due to transportation (low-no 0x)

Nez Perce Tribe
Inventory - Big Canyon Acclimation Facility
2001 Fall Chinook Yearling

Received	23,760	fish on 3/5					**Released**	31,399	fish on 4/9		
	47,449	fish on 3/6						45,687	fish on 4/10		
	45,058	fish on 3/7						36,129	fish on 4/11		
Total	**116,267**						**Total**	**113,215**			

Tank	Starting Inventory	Morts	Pre-release Sample	Inventory	Percent Mortality	Date Received	FPP *	Release Date	FPP **	Days Acclimated
1										
2	7,909	41		7,868	0.52	03/06/01	13.2	04/09/01		34
3	7,909	42		7,867	0.53	03/06/01	13.2	04/09/01		34
4	7,902	68		7,834	0.86	03/07/01	13.6	04/09/01		33
5	7,902	72		7,830	0.91	03/07/01	13.6	04/09/01		33
6	7,915	87		7,828	1.10	03/07/01	13.6	04/10/01		34
7	7,909	407		7,502	5.15	03/06/01	12.5	04/10/01		35
8	7,904	56		7,848	0.71	03/06/01	13.0	04/10/01		35
9	7,909	410		7,499	5.18	03/06/01	12.3	04/10/01		35
10	7,909	290		7,619	3.67	03/06/01	12.3	04/10/01		35
11	7,897	506		7,391	6.41	03/05/01	10.6	04/10/01		36
12	7,891	257		7,634	3.26	03/05/01	10.6	04/11/01		37
13	7,972	527		7,445	6.61	03/05/01	10.8	04/11/01		37
14	5,513	122		5,391	2.21	03/07/01	12.5	04/11/01		35
15	7,913	89		7,824	1.12	03/07/01	12.5	04/11/01		35
16	7,913	78		7,835	0.99	03/07/01	12.5	04/11/01		35
	116,267	**3,052**		**113,215**	**2.62**		**12.40**		**Avg. FPP**	**10.2**

Elastomer: LG 94.6
** PIT tag sampling, 4 tanks only to minimize stress, one week prior to release.
CWT Code 63-04-77

Nez Perce Tribe
Inventory - Big Canyon Acclimation Facility
2001 Fall Chinook Sub Yearling Group1

Received	281,812	fish on 5/8/01				**Released**	499606	fish on 5/29/01			
	219,448	fish on 5/9/01									
	Total	**501,260**				**Total**	**499606**				

Tank	Starting Inventory	Morts	Pre-release Sample	Inventory	Percent Mortality	Date Received	FPP *	Release Date	FPP **	Days Acclimated
1	31,372	88	0	31,284	0.28	05/09/01	62.0	05/29/01		20
2	31,372	63	0	31,309	0.20	05/09/01	62.0	05/29/01		20
3	31,372	112	0	31,260	0.36	05/09/01	62.0	05/29/01		20
4	31,372	86	0	31,286	0.27	05/09/01	62.0	05/29/01		20
5	31,320	96	0	31,224	0.31	05/09/01	72.0	05/29/01		20
6	31,320	86	0	31,234	0.27	05/09/01	72.0	05/29/01		20
7	31,320	78	0	31,242	0.25	05/09/01	72.0	05/29/01		20
8	31,289	138	0	31,151	0.44	05/08/01	67.0	05/29/01		21
9	31,289	121	0	31,168	0.39	05/08/01	67.0	05/29/01		21
10	31,290	74	0	31,216	0.24	05/08/01	70.0	05/29/01		21
11	31,289	62	0	31,227	0.20	05/08/01	67.0	05/29/01		21
12	31,289	142	0	31,147	0.45	05/08/01	67.0	05/29/01		21
13	31,286	180	0	31,106	0.58	05/08/01	72.0	05/29/01		21
14	31,360	138	0	31,222	0.44	05/08/01	70.0	05/29/01		21
15	31,360	80	0	31,280	0.26	05/08/01	70.0	05/29/01		21
16	31,360	110	0	31,250	0.35	05/08/01	70.0	05/29/01		21
	501260	**1654**	**0**	**499606**	**0.33**		**67.8**	**Avg. FPP**	**53.3**	

CWT Code 63-02-71 (196,507)
** PIT tag sampling, 4 tanks only to minimize stress, one week prior to release.

Nez Perce Tribe

Inventory - Big Canyon Acclimation Facility

2001 Fall Chinook Sub Yearling Group 2

Received	**361,220 fish on 5/31/01**				**Released**		**357,362 fish on 06/13/01**			
	Total		**361,220**				**Total**	**357,362**		
	Starting		Pre-release		Percent	Date		Release		Days
Tank	Inventory	Morts	Sample	Inventory	Mortality	Received	FPP *	Date	FPP **	Acclimated
1										
2	28,924	282		28,642	0.97	05/31/01	78.6	06/13/01		13
3	28,689	479		28,210	1.67	05/31/01	78.6	06/13/01		13
4	12,870	245		12,625	1.90	05/31/01	105.5	06/13/01		13
5	22,040	168		21,872	0.76	05/31/01	95.0	06/13/01		13
6	22,040	135		21,905	0.61	05/31/01	95.0	06/13/01		13
7	22,040	169		21,871	0.77	05/31/01	95.0	06/13/01		13
8	29,185	153		29,032	0.52	05/31/01	65.0	06/13/01		13
9	23,973	188		23,785	0.78	05/31/01	78.6	06/13/01		13
10	23,973	74		23,899	0.31	05/31/01	78.6	06/13/01		13
11	23,973	75		23,898	0.31	05/31/01	78.6	06/13/01		13
12	23,973	181		23,792	0.76	05/31/01	78.6	06/13/01		13
13	24,885	533		24,352	2.14	05/31/01	105.0	06/13/01		13
14	24,885	404		24,481	1.62	05/31/01	105.0	06/13/01		13
15	24,885	360		24,525	1.45	05/31/01	105.0	06/13/01		13
16	24,885	413		24,472	1.66	05/31/01	105.0	06/13/01		13
	361,220	**3,858**		**357,362**	**1.07**		**89.81**		**Avg. FPP**	**78.2**
	** PIT tag sampling, 4 tanks only to minimize stress, one week prior to release.									

Nez Perce Tribe

Inventory: Capt John Rapids Acclimation Facility

2001 Fall Chinook Yearling

Received	70,819 fish on 2/12/01						**Released**	101,976 fish o	04/13/01	
	33,652 fish on 3/16/01									
Total	**104,471**						**Total**	**101,976**		
	Starting		Pre-release		Percent	Date		Release		Days
Pond	Inventory	Morts	Sample	Inventory	Mortality	Received	FPP *	Date	FPP **	Acclimated
1	104,471	2,495		101,976	2.39	2-12, 3-16	12.5	04/13/01	10.20	60
	Elastomer: LB-88.9									
	CWT Code 63-04-78									
	** Pit tag sampling only: to prevent stre									

Nez Perce Tribe

Inventory: Capt John Rapids Acclimation Facility

2001 Fall Chinook SubYearling

Received	501,440 fish on 5/10/01						**Released**	501,129 fish on 5/26/01			
Total	**501,440**						**Total**	**501,129**			
	Starting		Pre-release		Percent	Date		Release		Days	
Pond	Inventory	Morts	Sample	Inventory	Mortality	Received	FPP *	Date	FPP **	Acclimated	
1	501,440	311		501,129	0.06	05/10/01	59.0	05/10/01	49.50	16	

** Pit tag sampling only: to prevent stress

Appendix C: Fish Health Report

Fall Chinook Acclimation - 2001

By agreement of the agencies involved, an Organosomatic Index (Goede's Index) was not done on each release group of Fall Chinook Salmon (FCS) as it has been done the last 4 years. We felt that 4 years was enough for a base-line and, until such time that we know how to fully interpret the Goede's Index, we would not do this assay for now.

Hematocrit were taken from 20 fish from each yearling group. The groups from Lyons Ferry, Big Canyon, and Captain John Rapids had hematocrit within the normal range; Pittsburg Landing had 2/20 below normal range. Pittsburg Landing had a moderate amount of fish with cataracts in one or both eyes descaling. Descaling was also seen in the other acclimation sites.

Individual ELISA assays were run on the yearling groups. The sub-yearlings were pooled because of the small size. Because of the change in ELISA reagents by Kirkegaard & Perry, we are unable to compare ELISA OD values to previous years. The new antibody is less sensitive and we are now comparing samples to our controls and blanks. Trends from year to year can be compared.

The following table summarizes ELISA values for all groups.

DATE	SITE/AGE	V. HIGH	HIGH	MEDIUM	LOW	V. LOW	ND
1/16/01	LF - Y	3	0	2	14	31	8
4/9/01	BC - Y	6	13	14	22	5	0
4/10/01	PL - Y	25	16	12	10	0	0
4/11/01	CJ - Y	16	13	10	20	1	0
4/12/01	LF - Y	5	2	6	25	23	0
5/21/01	PL - SY	0	0	0	3	20	7
5/23/01	BC - SY	0	0	0	0	30	0
5/22/01	CJ - SY	0	0	0	0	55	5
5/23/01	LF - SY	0	0	0	2	58	0
4/2/01	LF - SY	0	0	1	1	9	9

ELISA values varied considerably between the first sample (1/16/01) and the pre-release samples in the yearling group at the acclimation sites but not in the group held at Lyons Ferry. The two Lyons Ferry groups had a preponderance of Lows and very lows at both sampling times, while ther acclimated groups switched to a majority of mediums through very highs. This is the reverse of what has happened the last four years. Pittsburg Landing has generally had the lowest levels of BKD at release but, in 2001, it had the highest levels, based upon ELISA values.

Again, there has been no statistical analysis done with this data. Clinical signs of BKD were few with 3/60 at BC, 5/60 at PL, 4/60 at CJ, and 6/60 at LF.

There were no viruses isolated from these groups and no *M. cerebralis* (sampled only from the LF group). In the yearling groups, bacteria isolated included *Ps. Flourescens, A. hydrophila, and A. sobria* from Lyons Ferry and *A. sobria* from Captain John Rapids. These are environmental bacteria but can be pathogenic under the right conditions. No significant bacteria was isolated from the sub-yearling group. Overall, the sub-yearlings were very healthy fish, smolting and with good fat levels.

Weekly monitoring samples for BKD were collected at the acclimation sites. The following table summarizes the monitoring results. What monitoring shows is that BKD is still there, regardless of time.

DATE	SITE/AGE	V. HIGH	HIGH	MEDIUM	LOW	V. LOW	ND
2/22/01	CJ - Y	1	0	0	11	6	0
3/29/01	CJ - Y	0	1	1	6	1	0
4/6/01	CJ - Y	0	2	1	3	6	0
3/27/01	PL - Y	3	4	1	2	0	0
3/15/01	PL - Y	1	1	2	5	1	0
3/21/01	PL - Y	2	6	6	13	3	0
3/15/01	BC - Y	10	0	0	0	29	1
3/28/01	BC -Y	2	1	2	5	0	0
4/5/01	BC - Y	2	4	2	2	0	0

Conclusions - Yearling groups pretty typical of years, just switched around a bit. The sub-yearlings, however, were a different story. At none of the sites, was there high levels of BKD, all were very low or not detected. A pleasant change from previous years, when BKD was prevalent in the sub-yearlings